43. Review by T. H. :—Annual Game Report. Uganda 1937. *J.B.N.H.S.* Vol. 40, p. 317 (1938).
44. T. H. Livesey :—Systematic firing of forests on hill sides causes erosion and much wild life damage. Burma. *J.B.N.H.S.*, Vol. 40, p. 569 (1938).
45. Theodore Hubback :—Rhinoceros exterminated by greed and superstition. Malaya, Burma, India. *J.B.N.H.S.*, Vol. 40, pp. 612-616 (1938).
46. D'Arcy Weatherbe :—Foreword by Theodore Hubback. The Kahilu Rhinoceros Sanctuary, Burma India. *J.B.N.H.S.*, Vol. 41, p. 146 (1939).
47. Lt. Col. E. G. Phythian-Adams :—The Nilgiri Game Association, 1879–1939. *J.B.N.H.S.*, Vol. 41, pp. 384-396 (1939).
48. D'Arcy Weatherbe :—Burma's decreasing Wild Life. *J.B.N.H.S.*, Vol. 42, pp. 150-160 (1939).
49. Humayun Abdulali :—Partridge snaring by wandering tribes. *J.B.N.H.S.*, Vol. 43, p. 659 (1942).
50. F. G. D. Ogden :—Partridge snaring by wandering tribes. *J.B.N.H.S.*, Vol. 44, p. 299 (1942).
51. Salim Ali :—Birds of Mysore. Bustard, Florican, both scarce. *J.B.N.H.S.* Vol. 44, p. 211 (1942).
52. Major H. G. Rossell :—Note on Yala Sanctuary, Ceylon. *J.B.N.H.S.*, Vol. 44, p. 311 (1943).
53. E. O. Shebbeare :—A. Malayan National Park. The King George V Memorial Park. *J.B.N.H.S.*, Vol. 46, pp. 558-562 (1946).
54. Honorary Secretary, Ceylon Game and Fauna Protection Society, Annual Report. 54th Season (1947).
55. Association for the Preservation of Game in U.P. Annual Report, 1933. By Joint Honorary Secretaries, Major. J. Corbett and Hasan Abid Jafry.
56. W. F. H. Ansell. A Note on the position of Rhinoceros in Burma. *J.B.N.H.S.*, Vol. 47, pp. 249-276 (1947).

NOTES ON INDIAN BIRDS, I

THE RACES OF *ANTHUS HODGSON*

BY

S. Dillon Ripley, Ph. D.

Yale University (U.S.A.)

In the course of studying Indian collections made by Walter Koelz recently in the Central Provinces and United Provinces of India, and by myself in the Mishmi Hills of North-east Assam, I came upon a number of perplexing specimens of Hodgson's Tree-pipit. In order to attempt to gain some understanding of this difficult species I have assembled over one hundred specimens from the collections of the U.S. National Museum, the American Museum of Natural History, including Dr. Koelz' material, the Academy of Natural Sciences, the Museum of Comparative Zoology and the Peabody Museum of Yale University. I am most grateful to the authorities concerned for the loan of this material and to my friend Dr. Koelz for permission to examine his specimens.

History of the Species

In whatever continent, pipits seem to rank among the more difficult of the species of birds for the systematist or student of distribution to understand. This Asian species is more difficult than most because its breeding biology is little understood, and the confusion attendant on the names assigned to the races is so widespread that it is well-nigh impossible to depend on the existing literature for guidance in identifying the breeding localities of the populations. The migration of this species is also little known and what facts there are

seem difficult to piece together. In general it is possible to summarize to this extent :

(*a*) Breeding Cycle. *Anthus hodgsoni* appears to nest any time from late May at least until July. I have not been able to examine a single specimen from a breeding locality which has had breeding data on the label. However, various authors speak of nests and eggs during this period in areas ranging from the Indian Himalayas above 8,000 feet to farthest Siberia. Birds are on the move both shortly before and immediately after the nesting season.

(*b*) Migration. Available evidence seems to indicate that birds that breed farthest north tend to migrate farthest south. There is not the equal spread of migration that there is in American pipits for example, in which the farther north breeding forms tend to spend the winter near the breeding area of their southern relatives who have meanwhile progressed still farther south for the cold months. Birds that breed in Siberia are found in southernmost India, while birds that apparently nest in the Himalayas do not wander much farther south than the adjacent plains. In southern India birds have been recorded from October 13 until April 19th, but lack of later records does not seem to mean that the birds have gone straight to their breeding grounds. In the spring of 1947 I found the Siberian breeding race of *Anthus hodgsoni* dallying in the foothills of Nepal between five and six thousand feet, into early May. These specimens showed no signs of breeding activity. Futhermore post-breeding birds seem to have a sort of wandering period possibly following local food sources, which takes them all over the eastern Asian mountains in an east or west direction, long before they migrate south. It is this apparent random dispersal which has helped to confuse our knowledge of the species. Specimens of one race may be found on the breeding grounds of another within a very short period after the end of the nesting season.

In this connection it is impossible to do more than point out for future travellers in upper Yunnan, Szechuan and Chinese Tibet, the importance of acquiring some data in regard to the breeding of these tree-pipits. How can these populations retain their identity when their breeding territory is being criss-crossed by birds of neighboring populations 'en passage' virtually during the breeding season? Or does the very shortness of the breeding season act as a safeguard? Barriers to interbreeding such as distinctive visual or auditory characters (postulated by Huxley in 'Evolution' Oxford 1938), would seem to be lacking. Territorial barriers are apparently easily overcome. Intergrading among the populations must exist. Possibly then the barriers to complete swamping of these recognizable races are physiological, correlated with an extremely short period of gonadal activity.

(*c*) Moults. Freshly moulted birds are found in the collections taken at almost any season of the year. In this series I have birds in fresh plumage taken in August, October, November, December, February, March and April. Similarly birds in worn plumage are taken at all seasons, although part of the complication here is provided by young birds of the year. Briefly the moult may be summarized as;

1. First winter plumage acquired by a partial post-juvenal moult in late August-September, excluding the wings and tail. At this stage young and adult become virtually indistinguishable.
2. First nuptial plumage acquired by a partial pre-nuptial moult in April-May.
3. Adult winter plumage acquired by a complete post-nuptial moult indistinguishable from the first winter plumage. Late summer.
4. Adult nuptial plumage acquired by a partial pre-nuptial moult. Late Spring.

Of the three breeding populations which I have been able to distinguish it would seem that the oldest population in time is the northernmost one which breeds right across eastern Siberia, Mongolia and Manchuria to Kamschatka, Sakhalin and northern Japan. This population winters as far south as Travancore on the west and the Philippine Islands on the east, and may well be composed of several breeding strains. However, phenotypically this population appears as one.

A second population seems to be of rather recent origin. Its breeding area runs along the southern Himalayas and up through Yunnan and Szechuan to Kansu, and from there possibly over Korea and Japan (vide A Hand-list of the

Japanese Birds, 1942, p. 27). In winter it wanders down through the foothills with apparently somewhat irregular appearances as far south as Mysore in India or the Philippines. This population appears to be less numerous in museum collections, and it would be interesting to know whether there is any correlation between this and conditions in life. I term this population 'recent' because its nesting locality in the Himalayas and its wintering range in the eastern Indian plains are areas of more recent suitability, geologically speaking, for its occurrence.

A third, and I believe the youngest population, can be recognized. This race breeds in southeast Tibet and the adjacent parts of extreme western China. I have found only four wintering specimens in India and northern Tonkin. La Touche (A Handbook of the Birds of Eastern China, 1925-30, I, p. 420) speaks of a heavily-streaked bird with a very long bill in his collection from Formosa which may also be a specimen of this population. This race occupies the smallest range and would appear to be by far the smallest population numerically. Its location, bounded by high mountains and the arid plateau of Tibet would seem to have presented the required degree of isolation in which significant characters could be allowed to develop. On the southwest, in the Himalayas, south and south-east in Yunnan, and east and northeast in Szechuan, its range is bounded, and the boundary remains to be exactly defined, by the territory of the preceding, or second population.

Schäfer, who has collected this race on its breeding grounds in north central Sikang on the upper reaches of the Yangtze Kiang and Yalung Rivers in an area from Jeykundo south and east to Batang and Tatsienlu, (vide Schäfer,J.F.O., *86*, Sonderheft, p. 204), calls this a rare breeding bird of the palaearctic mountain forest zone from 2700—3300 m. altitude. Its northern limits coincide with the edge of the forest. It is found in clearings in scrub forest, and in open bushy areas. He lists its breeding season as June, July and August (?), although his specimens were non-breeding individuals taken in September and October. By October it is leaving its mountain breeding range and moving south and east into its subtropic winter environs.

Description of the races.

(*a*) The nothernmost race may be characterized as follows ; in fresh plumage some seventeen out of forty-five specimens examined appear to be a rich tawny brownish-olive above with very narrow shaft streaks on the feathers of the head and upper back. These shaft streaks run up to about 1.5 mm. in width. In worn birds this measurement still does not become as great as 2 mm. There is considerable variation in the prominence of these streaks on the upper surface, depending on the ground color of the feathers. Some birds are colored so that the streaks blend into their background. In general birds from the easternmost part of the range (Kamschatka) are the dullest, most neutral with the most washed-out streaking. The wing coverts are edged with rich bright buff. On the underparts there are short black streaks, sometimes really spots rather than streaks, on the feathers of the lower throat and breast. These markings are carried down into the upper belly in some specimens, possibly depending on the make-up of the skins, and also well down on the flanks and thighs. The underparts are whitewashed with buff on the sides of the throat, breast and flanks.

In worn plumage this race appears rather greyish-brown on the upper parts and the pale edges to the wing coverts seem enlarged and paler. The streaking on the head and back seems little more pronounced. Below the birds tend to be more whitish and the black spots on the breast seem slightly less pronounced.

(*b*) The middle race found in the Himalayas and up to Kansu can be described as follows : in fresh plumage this race appears tawny olive green above with strongly pronounced shaft streaks on the head and back. The superocular streak in both this and the preceding form is pale and whitish. The streaks on the upper back measure from about 2-2.5 mm. in width. In worn birds this measurement reaches 3 mm. The pale edging to the wing coverts seems narrow and rather dull. Below fresh specimens have the throat tinted buffy and the abdomen and belly rather whitish. The shaft streaks are immaculate black on a light buffy ground and are broad on the lower throat changing to streaklets on abdomen.

In worn plumage the streaks on the upper parts are more pronounced, and the base color has faded to greyish olive-brown. Only the wings and lower rump

preserve a hint of the fresh greenish olive tone. The pale edges to the wing coverts have become more washed out. Below, worn specimens seem more pale and lacking in the buffy tone of the fresh plumage.

(*c*) The third population is based on twelve specimens which I have examined from Southeast Tibet,Molasche, Kham, and from Southwest Kansu, India and Tonkin. Only one specimen is in truly fresh plumage. This bird is tawny bronzy-olive above with broad pale edges to the wing coverts. The feathers of the upper back have broad central shaft streaks of rich brownish-black. In this July specimen these are 4-4. 5 mm. in width, while in a worn January bird they measure up to 6 mm. The super/ocular streak is pale citron and the shaft streaks on the head are not prominent, indeed very much reduced. Below, this bird is tawny except for the throat and lower belly, and with dark broad streaks on the lower throat feathers changing to narrow streaklets on the abdomen.

In worn plumage this race appears almost uniform blackish on the back, so prominent have the streaks become through wear. Only the wings and the rump preserve a hint of the dark yellow-olive tone of the fresh plumage, the rest appearing quite tawny. The tips to the wing coverts are faded and very pale buff in color. The underparts appear more whitish and the black streaking on the breast and abdomen is more pronounced.

MEASUREMENTS

	Wing	Tail	Culmen
Race A.			
45 ♂♂ and ♀♀	81.5-90 (84.54)	57-64.5 (61.0)	12-14.5 (13.17)
Race B.			
18 ♂♂ and ♀♀	80.5-87.5 (84.4)	57-64.5 (61.9)	12-14 (13.14)
Race C.			
12 ♂♂ and ♀♀	84.5-93.5 (87)	60-69.5 (64.2)	12-15.5 (13.95)

As will be noted from the above the third population from Southeast Tibet and Sikang has a tendency to larger size than the other two in all three dimensions given. On the basis of size, the first two races are inseparable, but when the standard deviations are worked out on the bill length alone for the third race as compared to one of the others, the resulting value indicates that the probability is very great that two distinct populations are represented.

NOMENCLATURE

Anthus hodgsoni has had a difficult nomenclatoral career. Richmond (Blackwelder Res. in China, 1907, pt. II, p. 493.) renamed *Anthus maculatus* 'Hodgson' of Jerdon (Birds of India, 1864, 3, p. 873.) as this name, derived from Hodgson, was a nomen nudum and had already appeared in synonomy under *Anthus trivialis*. Hartert (Zusatze und Berichtigungen, 1921-2, Band 1, p. 2094) pointed out that *Anthus maculatus* Jerdon is preoccupied by *Anthus maculatus* Vieillot, 1818 (ex *Motacilla maculata* Gmelin).

Hartert and Steinbacher (Vög. pal. Fauna, Ergänzungsband, 1933, p. 137.) revised the species and restricted the name *hodgsoni* Richmond to the heavily streaked form of tree-pipit more common in the western part of the summer and winter ranges of the species in Asia. At the same time they named the lightly streaked form found in eastern Siberia, Kamschatka and Sakhalin, *Anthus hodgsoni inopinatus*.

A year later Whistler and Kinnear (Journ. Bomb. Nat. Hist. Soc., 1934, xxxvii, p. 96.) discussed this species anew. Unfortunately the authors disagreed with Hartert and Steinbacher and attempted to fix the name *hodgsoni* to the lightly streaked population maintaining that Jerdon's discussion of Hodgson's *maculatus* involved both heavily and lightly streaked birds. At the same time they agreed that the original *maculatus* Hodgson was intended primarily for the more heavily streaked bird.

As the first revisers of the species Hartert and Steinbacher's opinion should undoubtedly stand as pointed out by Mayr (Ibis, 1938, p. 301.). Also, reading over Jerdon's description of this species (tom. cit., 1863, 2, p. 228.) I do not agree with Whistler and Kinnear that this is a composite description. It seems to me to be a rather accurate description of *Anthus h. hodgsoni*. Furthermore Whistler and Kinnear's range data are not entirely accurate. Actually both light and dark streaked birds occur in about equal proportion in Bengal, an area which they feel is more the wintering zone of the Siberian form.

I find that I also disagree with Stuart Baker (Fauna Brit. India, Birds, 1926, iii, p. 281.) and Ticehurst (Journ., Bomb. Nat. Hist. Soc., 1927, xxxii, p. 351.) in regard to the ranges and names for these races. *Anthus maculatus yunnanensis* Uchida and Kuroda (Annot. Zool. Japon. 1916, ix, p. 134.) was described from Mengtz, Yunnan, and I should have been inclined to synonomize it with *hodgsoni* if it had not been that Yamashina (Tori, 1939, x, No. 49, p. 477.) discusses the type specimen of *yunnanensis* and says that it is a member of the northern unstreaked pale form which migrates to Yunnan in the winter 'en passage'. Thus *A. h. inopinatus* Hartert and Steinbacher becomes a synonym of *yunnanensis*.

Anthus maculatus berezowskii Sarudny (Orn. Monatsb., 1909, xvii, p. 41.) was described from a single specimen from Southwest Kansu out of a collection of eight specimens. It was noted that this specimen has darker, wider streaks than the other birds, more like those of *A. trivialis*, and as strongly black in color. This is a fairly accurate description of the most heavily streaked and least common of the three faces from Southeast Tibet and Sikang. Among the specimens in hand from Southwest Kansu there is a single summer bird of this heavily streaked race (taken in July) which I should be inclined to consider a topotype of *berezowskii*. All other Kansu birds examined belong to the less heavily streaked population (*hodgsoni*), while none belong to the most lightly streaked Siberian bird (*yunnanensis*).

There has recently (Ibis, 1948, p. 152.), been a discussion between Mr. H. G. Deignan and Sir Walter Williamson as to the authority for the name *Anthus hodgsoni*. I incline to Mr. Deignan's conclusion that the author of the name is Richmond (in Blackwelder), whether or not the description is in talics or inverted commas, because the rules of nomenclature seem quite clear that where an author publishes, as in edited matter, another author's manuscript name and description of a species or other group, formally stating such to be the case, or where the context implies that such is the fact, the authority for the name is the author of the manuscript so used.

As to making the species *hodgsoni* into a group of races of *Anthus trivialis* (also discussed in the same correspondence), I should prefer to let them stand as species. They are presumably allopatric (contra Stuart Baker, tom. cit. p. 280.) members of a superspecies.

Consequently I would list these races as follows:

(*a*) *Anthus hodgsoni yunnanensis* Uchida and Kuroda.

Synonym: *Anthus hodgsoni inopinatus* Hartert and Steinbacher

Range.—breeds in Siberia east to Kamschatka, Sakhalin, Kuriles and Hokkaido; winters in India in the southwest; Travancore above 4,000 ft., Palni and Nelliampathy Hills, Nilgiris, the Wynaad, Madras Presidency west in the Biligirirangan Hills and north to Jeypore, United Provinces, Bengal, and in the Himalayan foothills at least from Nepal to Northeast Assam (Mishmi Hills), Northern Burma, Yunnan (type locality), Siam, Indo-China east through China, primarily in the coastal areas, Shaweishan I., Korea, Japan, the Riukiu Is. and the Philippines.

(*b*) *Anthus hodgsoni hodgsoni* Richmond.

Range.—presumably breeds along the higher Indian Himalayas from Garhwal (at least) east[1] above 8,000 ft.,[2] Yunnan, Szechuan, Southwest Kansu and possibly Korea and Japan where it may integrate with *yunnanensis* (vide A Handlist of the Japanese Birds, 1942, p. 27.); winters in India as far south as Mysore and Madras Presidency (spec. examined from the Bababudan and Biligirirangan Hills), in Bengal, northeast Assam east through the Indo-Chinese sub-region to China (Hupeh and along the coast), Formosa, Korea, the Riu-kius, Japan and the Philippines.

(*c*) *Anthus hodgsoni berezowskii* Sarudny

Range.—probably breeds in Southeast Tibet and in Sikang Prov., China, the region of Kham and Molasche; wanders to Southeast Kansu (post breeding)

---

[1] Whistler (Journ., Bomb.Nat.Hist.Soc., 1945, 45, p.284.) notes that there is no substantiation for this pipit's breeding in Afghanistan.

[2] *Anthus hodgsoni burzil* Koelz (Proc. Biol. Soc. Wash., 1939, 52, p.75.) is a synonym of *A. trivialis*.

and the Lichiang Range of Northwest Yunnan; winters in India, United Provinces (3 spec.), Indo-China, Chapa, Tonkin (1 spec.), and Formosa (?) vide La Touche (op. cit.).

KEY

A key for these races would be as follows:

A. Smaller.

a. with prominent streaks on head but nearly obsolete streaks on back. never as great as 2mm. in width .. *A. h. yunnanensis*

b. with narrow but prominent streaks on head, and back reaching 3 mm. in width in worn plumaged birds .. *A. h. hodgsoni.*

B. Larger.

c. with strong broad streaks on back reaching 6 mm. in width in worn birds. Head streaks relatively reduced .. *A.h. berezowskii.*

NOTES ON POONA REPTILES

BY

GARTH UNDERWOOD

The following notes are on reptiles collected during ten months stay in Poona with the army in 1945. All the specimens described came from the area bounded by the hills on either side of the road going to Pashan village, which is to the west of Poona itself.

TESTUDINES

Lissemys punctata Bonaterre.

The only specimen was a recently hatched young from beside Pashan tank, on 5-7-47. It measured 43 × 33 mm.; the umbilicus was large ca. 2 × 3 mm. on a line joining the anterior edges of the posterior plastral flaps. There were 4 crescentic folds of horny skin on the wrist and 1 under the heel, the distinction between coastal and extracoastal areas was not apparent, the whole surface was ropy. The carapace was brown with scattered black spots the plastron reddish yellow with a pair of brown patches.

SQUAMATA

SAURIA.

GEKKONIDÆ. (Marathi Pāl, पाल)

Hemidactylus triedrus Daudin.

13 specimens were examined, 6♂, 7♀. The labials varied; upper 7-10, lower 7 or 8 (6 and 9 unilaterally, 2 cases each) Internasals 3, except 1 case 2 and, 1 case 4 (2 median ones very small). Subdigital lamellæ under 1st digit 6-8 (6 in 3 cases, 8 in 1 case), under 4th digit 7-9 (7 in 1 case) In the males, femoral pores 12-14 (9 and 11 unilaterally one case each) separated by 1 or 2 median scales.

The largest specimen, ♂, was snout to vent 82 mm., tail broken. Mature ♀♀ were about 10 mm. shorter than the ♂♂. Ground colour brown with 4 light bands on back, whitish partly filled in with brown and edged with dark reddish brown, tubercles in the bands white: one band across occiput, white anteriorly dark brown posteriorly; dark brown band from snout accross lower half of eye to point above ear, edged with white; supraocular fringe yellowish; light greenish across top of head between eyes. Those with complete tails had 7-9 dark bands the last several extending onto the underside.

Between 1-5-45 and 18-5-45 3 ♀♀, bodies 61, 61 and 72 mm., were obtained carrying 2 eggs each.

23-5-45 a ♀, body 59 mm. laid 2 eggs $12\frac{1}{2} \times 10\frac{1}{2}$ mm.

22-6-45 a ♀, body 62mm. laid 2 eggs $11\frac{1}{2} \times 9\frac{1}{2}$ mm.

This gecko was found only at night time in fields or amongst rocks where there was plenty of grass. 5 small specimens, bodies c. 30-40 mm., were found in termites' nests, in July and August.